

**REMARKS**

This application is amended in a manner to place it in condition for allowance at the time of the next Official Action.

**Status of the Claims**

Claims 18 and 31 are amended to include the ranges recited in dependent claims 20 and 33, respectively, and to recite one type of binder instead of the alternative of e1 or e2.

Claim 43 is amended in a similar manner.

Accordingly claims 19, 20, 32 and 33 have been cancelled.

Claims 18, 21, 23-31, 34, 36-43 remain in this application.

Claims 26, 27, 39 and 40 have been withdrawn.

**Claim Rejections-35 USC §103**

Claims 18-21, 23-25, 28 and 30 were rejected under 35 USC §103(a) as being unpatentable over PINOMAA US 5,021,476 (PINOMAA).

Claims 31-34,36-38 and 41-43 were rejected under 35 USC §103(a) as being unpatentable over PINOMAA US 5,021,476 (PINOMAA), further in view of BARNES et al. (BARNES).

These rejections are respectfully traversed for the reasons discussed below.

The claimed binder consists essentially of a combination of 60-80% weight of at least one natural or modified natural resin, of vegetable origin, with a softening point of 100 to 200°C (measured by EN 1427) and 20-40% weight of at least one oil of vegetable origin of a particular viscosity. The binder has a penetrability of 20-300 1/10mm at 25°C and a softening point of 30 to 75°C.

PINOMAA fails to disclose or suggest the two amended features:

The softening point of the claimed resin.

PINOMAA specifies a crystalline tall oil rosin produced by the cellulose industry that has a softening temperature which is about 65°C or 73°C (column 2, lines 23 to 26).

Examples 1 to 3 are made from ordinary rosin (column 3, lines 11-12). Example 4 is made from tall resin ester which is tall oil rosin modified by fumaric acid in which the esterifying alcohol is pentaerythritol and glycerol (column 5, line 19). Example 5 is made from a soft, unconvertible tall oil rosin (column 5, 44-45). Thus, the resins used in examples 1 to 3 and 5 do not have a softening point in the claimed range, i.e. between 100 to 200°C.

Moreover, there is no indication in PINOMAA about the softening point of the resin used in example 4. However, even if

one considered that this resin could have a softening point in the claimed range, example 4 is very different from the invention. In fact in this example:

- the binder comprises 83% of resin based on the total weight of resin (a) and oil (b) ( $\text{mass resin} = 90\text{g} / (\text{mass resin} + \text{mass oil} = 18\text{g})$ ),
- the oil used is a diesel oil and therefore it is not a vegetable oil and the binder comprises 16 % of oil based on the total weight of resin (a) and oil (b),
- the binder comprises polypropylene.

Accordingly, the binder of Example 4 does not satisfy to the criteria (a), (b) and (d) of claims 18, 31 and 43. In fact, the oil is not vegetable, the proportion of oil and resin are out of the claimed range and the binder comprises a polymer. Furthermore, PINOMAA does not specify the softening point of this resin and the softening point of the binder.

Thus, PINOMAA fails to disclose or suggest a binder having 60-80% of a resin with a softening point of 100-200°C.

The softening point of the claimed binder.

The claimed binder necessarily presents the following features:

- a penetrability of 25°C of 20 to 300 1/10 mm and
- a softening point of 30 to 75°C.

The inventors discovered that using a resin having a

softening point of 100°C to 200°C enables to obtain without plastic a binder having a softening point ranging from 30 to 75°C and a penetrability of 25°C of 20 to 300 1/10 mm. Thanks to these properties the binder of the invention can replace bitumen in road application.

PINOMAA, however, does not disclose that the use of these specific resins confers these particular properties.

Annex 1 enclosed in the Appendix recapitulates the examples of the application and the example 5, test 1 of PINOMAA. Example 5, test 1 is the composition of PINOMAA that is closest to binders according to the claimed invention. A direct comparison between the binder of example 5, test 1 of PINOMAA and the binders according to the claimed invention shows that the use of a resin having a softening point less than 100°C does not enable one to obtain a binder having a softening point of 30 to 75°C (i.e., feature (e) of independent claims 18, 31 and 43).

In fact, in PINOMAA, the binders of tests 1 to 6 (example 5) are too soft to measure the softening point. It is only possible to measure the softening point of binders 7 and 8 because they comprise plastic. PINOMAA explicitly specifies that both rubber and plastic are needed for the product to possess both a good cold resistance and a good heat resistance (high softening point) (column 5, lines 56-59).

Therefore, PINOMAA discloses that it is necessary to add plastic in order to have a binder with a high softening point, i.e. a measurable softening point.

The binder according to the claimed invention, however, which has a softening point of 30 to 75°C, differs in that it comprises a specific resin having a softening point ranging from 100 to 200°C and in that it does not comprise polymer.

BARNES is not able to remedy the shortcomings of PINOMAA for reference purposes. BARNES discloses that cobalt and manganese octanoate are top driers and barium and zirconium octanoate are through driers, and that some metallic octanoates are oxidative polymerization catalyst. However, BARNES would not have provided any incentive to use the claimed resin in PINOMAA or to not use plastic in PINOMAA so as to even approach the claimed binder having a measurable softening point.

Therefore, independent claims 18, 31 and 43, as well as the dependent claims, are not rendered obvious in view of PINOMAA, with or without BARNES, and withdrawal of the rejection is respectfully requested.

### **Conclusion**

In view of the amendment to the claims and the foregoing remarks, this application is in condition for allowance at the time of the next Official Action. Allowance and passage to issue on that basis is respectfully requested.

Should there be any matters that need to be resolved in the present application, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

The Commissioner is hereby authorized in this, concurrent, and future submissions, to charge any deficiency or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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**APPENDIX:**

The Appendix includes the following item(s):

- ☒ - Annex 1: Examples of the claimed invention and PINOMAA

### ANNEX 1: Examples of the invention and of Pinomaa

Components		Invention (example of the specification)			Pinomaa Example
Resin	Softening Point	Binder 1	Binder 2	Binder 3	Example 5, test 1
Resin A	135°C	75%	-	-	-
Resin B	160°C	-	80%	-	-
Resin C	106°C	-	-	65%	-
Resin Pinomaa*	<b>65 or 73°C</b>	-	-	-	<b>84%</b>
Oil	Viscosity Pa.s 25°C				
Oil A	1	25%	-	-	-
Oil B	3	-	-	35%	-
Oil C	2,5	-	20%	-	-
vegetal Oil « ISO 32 »,	-	-	-	-	<b>16%</b>
Properties					
Penetrability (1/10 mm)		105	42	90	-
Softening Point		41	62	43	too soft to be measured as in Pinomaa

\* : the resin of Pinomaa has a softening point of 65 or 73°C as specified column 2, lines 25-26.